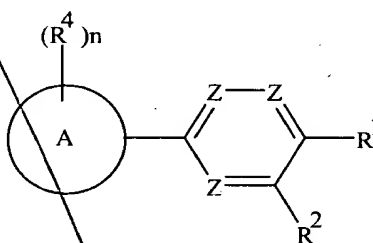


WHAT IS CLAIMED IS:

1. A DNA-PK inhibitor having a formula



or a pharmaceutically acceptable salt thereof, wherein:

n is an integer 0 through 4;

Z , independently, is CR^3 or N ;

A is an optionally substituted four- to seven-membered aliphatic ring containing 0, 1, 2, or 3 heteroatoms, independently selected from the group consisting of N , O , and S ;

R^1 is selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, heterocycloalkyl, $N(R^h)_2$, OR^h , carboxyl, carboxy, nitro, hydrazono, hydroxyamino, cyano, aldehyde, carboxamide, thiocarboxamide, acyl, mercapto, sulfonyl, trifluoromethyl, heteroaryl, and substituted heteroaryl;

R^2 is selected from the group consisting of hydrogen, alkyl, substituted alkyl, carbamoyl, carboxamide, $N(R^h)_2$, carboxy, OR^h , sulfamyl, nitro, phosphate, and sulfonamido; or

R^1 and R^2 are taken together with the carbon atoms to which each is attached to form a 5-, 6-, or 7-membered ring, wherein 1, 2, or 3 carbon atoms of R^1 and R^2 optionally are a heteroatom selected from the group consisting of O, N, S, and P, said ring optionally substituted with one or more =O, =S, =NH, OR^b , $N(R^h)_2$, carboxyl, carboxy, alkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl, said heteroatom optionally substituted with a group selected from the group consisting of aryl, substituted aryl, alkyl, alkyl substituted with acyl, and acyl;

R^3 , independently, is selected from the group consisting of hydrogen, halo, aldehyde, OR^h , nitro, $N(R^h)_2$, carboxyl, carboxy, sulfonamido, sulfamyl, and sulfo or a halide derivative thereof,

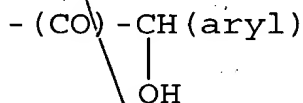
wherein R^h , independently, is selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, aryl, substituted aryl, heteroaryl, and substituted heteroaryl; and

R^4 , independently, is selected from the group consisting of OR^h , halo, $N(R^h)_2$, aldehyde, alkyl, substituted alkyl, acyl, aryl, substituted aryl, heteroaryl, and substituted heteroaryl;

with the proviso that when A is morpholinyl, R^2 and R^4 are hydrogen, and ZR^3 is CH at each occurrence, then R^1 is different from $-(CO)-CH_3$, $(C=CH_2)$ -phenyl, and nitro; and with the proviso that when A is morpholinyl, R^4 is hydrogen, and Z is nitrogen at each occurrence, then R^1 and R^2 , when taken together, is different from triazole.

2. The inhibitor of claim 1 wherein A is selected from the group consisting of morpholinyl, piperazinyl, thiomorpholinyl, piperidinyl, and tetrahydropyranyl.

3. The inhibitor of claim 1 wherein R¹ is selected from the group consisting of -H, -NH₂, -(CO)-NH₂, -(CO)-NH-OH, -(CO)-NH-NH₂, -(CO)-NH-NH-R^f, -(CO)-OH, -(CO)-O-CH₃, -(CO)-O-CH₂-CH₃, -(CO)-(4-methoxy)phenyl, -(CO)-(4-hydroxy)phenyl, -(CO)-(3-chlorophenyl), -(CO)-phenyl, -(CO)-benzyl, -(CO)-C₁₋₄alkyleneOR^h, -(CO)-C₁₋₄alkyleneSR^h,



-NO₂, -OH, -(CO)-C₁₋₄ alkyl, -cycloalkyl, -(CO)-substituted alkyl, -(CO)-(methoxy)alkyl, -(CO)-(alkoxy) substituted alkyl, -(CO)-aryl, -(CO)-heteroaryl, -(CO)-(substituted alkyl)_p-aryl, -(CO)-(substituted alkoxy)_p-aryl, -(CO)-((NR^k)_p-substituted alkoxy)-aryl, -(CO)-aryl-R^d, -(CO)-aryl-R^e, -(CO)-aryl-R^f, -CH=N-OH, -CH=N-NH₂, -CH=N-NH-CH₃, -CH=N-NH-CH₂-phenyl, -CF₃, -(CO)-CF₃, -(CO)-CH₂-morpholinyl, -(CO)-CH₂-heteroaryl, -(CO)-CH₂-CH-(CH₃)₂, -(CO)-CH₂-CH₂-(SO₂)-CH₃, -CHO, -C≡N, -CH₂-OH, -(CO)NR^dR^e, -(CS)-NH₂, -(CO)-R^f, -(CO)-CH₂Cl, -(CO)-CH₂-NR^dR^e, -(CO)-CH₂-S-(CO)-CH₃, -(CO)-CH₂-SH, -(SO₂)-phenyl, 2-(anilino)-4-thiazolyl-, 2-(pyridyl)-4-thiazolyl-, -benzoxazolyl, -imidazolyl, -thiazolyl, -substituted thiazolyl, -benzimidazolyl, -benzothiazolyl, -tetrazolyl, -(N-benzyl)-tetrazolyl, -(N-methyl)-tetrazolyl, -pyrazolyl, -(N-benzyl)-pyrazolyl, -(N-methyl)-pyrazolyl, -(N-acetyl)-pyrazolyl, -(N-mesyl)-pyrazolyl, -pyrazolyl-(CO)-R^uR^v,

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-(N-phenyl)-piperazinyl, -isoxazolyl, -pyrimidinyl, -(2-NH-CH₂-phenyl)-pyrimidinyl, -(2-(SO)-methyl)-pyrimidinyl, -(2-N-(N-t-butoxycarbonyl)-piperazinyl)-pyrimidinyl, and -(2-NH-CH₂-pyridine)-pyrimidinyl;

wherein R^d is selected from the group consisting of -H, -alkyl, -CH₂-phenyl, -phenyl, -O-CH₃, -pyridyl, -thiazolyl, -thiazinyl, -O-CH₂-phenyl, -O-phenyl, -O-methoxyphenyl, -OH, -CH₂-(CO)-O-CH₃, and -CH₂-(CO)-OH;

R^e is selected from the group consisting of -H, -CH₂-CH₂-O-CH₃, -CH₂-CH₂-CH₂-N(CH₃)₂, -O-CH₃, -CH₂-CH₂-(SO₂)-CH₃, -O-CH₃, -CH₂-pyridyl, -CH₂-phenyl, -alkyl, -CH₂-(CO)-O-CH₃, and -cyclopropyl; or

R^d and R^e are taken together to form -morpholinyl, -phenylpiperazinyl, -imidazolyl, -pyrrolidinyl, -(N-methyl)-piperazinyl, and -piperidinyl;

R^f is selected from the group consisting of -phenyl, -phenyl-(CF₃), -methylphenyl, -methoxyphenyl, -pyridyl, -alkyl, -benzyl, -thiophenyl, -thiazolyl, -chlorophenyl, -C(=NH)-NH₂, -fluorophenyl, -(CO)-phenyl, -(CH₂)-phenyl;

R^u is selected from the group consisting of -H, and -alkyl;

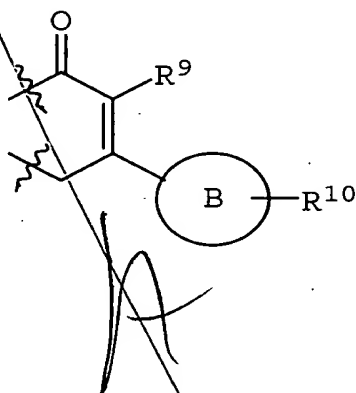
R^v is selected from the group consisting of -O-(CO)-CH₃, -NH-t-butoxycarbonyl, -O-phenyl, and -O-CH₂-phenyl; or

R^u and R^v are taken together with the carbon atoms to which they are attached to form a 5-membered ring containing an N, said N optionally protected with t-butoxycarbonyl;

R² is selected from the group consisting of -H, -OH, -Halo, -CH₂-OH, -(CO)-NH₂, -NH₂, -(CO)-O-CH₃, -O-CH₃, -NH-(CO)-CF₃, -NH-(CO)-CH₃, -NH-(SO₂)-CH₃, -NH-CH₃, -N(CH₃)-(CO)-CF₃, -N=((CH(phenyl)-CH₂-(CO)OH, -NO₂, -O-PO₃⁻, -O-alkyl, -O-(CH₂)_p-OH, -O-(CH₂)_p-O-benzyl, -O-(CO)-heteroaryl, -O-(CO)-amino acid, -O-(CO)-nicotinic acid, -O-(CO)-aryl, -O-(CO)-alkyl, -O-CH₂-(CO)-benzyl, -O-(SO₂)-O-CF₃, -(CH₂)-CH=CH=N(CH₃)₂, -O-(SO₃)⁻, and -O-(PO)(OR^j)(OR^k);

wherein R^j independently are H, aryl, alkyl, or heterocyclic; or

R^1 and R^2 are taken together to form a three- or four-membered component, respectively, of a five- or six-membered ring, preferably said ring selected from the group consisting of -2-imidazolidonyl-, $-R^g$ -thiazolyl-, -carbonylpyrrolyl methyl ketone-, -4-imino- 1,3,2-oxathiaphosphanyl-2-thione-, -4-imino-1,3,2-oxathiaphosphanyl-2-thione-2-(4'-methoxy)phenyl-, -3-oxofuranyl-, -N-acetyl-3-oxopyrrolinyl-, -N-(CH₂-COOH)-quinolonyl-, -N-(t-butoxycarbonyl)-quinolonyl-, -N-(CH₂-COOH)-quinolinyl-, -N-(t-butoxycarbonyl)-quinolinyl-, and



wherein B is aryl or a nitrogen-containing heteroaryl, R^9 is H or OR^h , and R^{10} is selected from the group consisting of halo, OR^h , $O(CH_2)_{1-3}N(R^h)_2$, $O(CH_2)_{1-3}CO_2H$, CN, morpholinyl, and N-(4-methyl)-piperazinyl;

wherein R^g is selected from the group consisting of -pyridyl and -anilino;

R^3 , independently, is selected from the group consisting of -H, -OH, $-OR^d$, $-NO_2$, $-NH_2$, $-NH-R^d$, -halo, -CHO, $-(SO_2)-OH$, $-(SO_2)-Cl$, and $-(SO_2)-NR^iR^k$;

wherein R^1 is selected from the group consisting of -H, $-CH_3$, $-CH_2$ -phenyl, -phenyl, $-CH_2-CH_2-O-CH_3$, $-CH_2-CH_2-CH_2-N(CH_3)_2$, $-O-CH_3$, $-CH_2-CH_2-(SO_2)-CH_3$, -pyridyl, -thiazolyl, $-O-CH_2$ -phenyl, -OH, $-CH_2-(CO)-O-CH_3$, and $-CH_2-(CO)-OH$;

R^k is selected from the group consisting of -H, -O-CH₃, -CH₂-pyridyl, -CH₂-phenyl, -CH₃, -CH₂-(CO)-O-CH₃, -cyclopropyl, and -CH₂-cyclopropyl; or

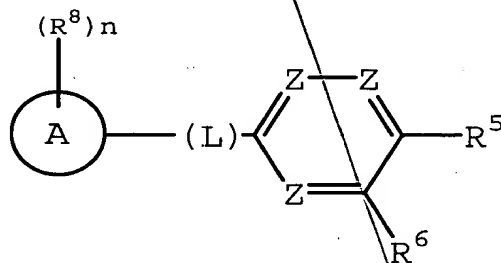
R^i and R^k are taken together to form morpholinyl, phenylpiperazinyl, imidazolyl, pyrrolidinyl, (N-methyl)-piperazinyl, and piperidinyl; and

R^4 , independently, is selected from the group consisting of -H, -CH₃, -OCH₃, -OH, -(CO)-CH₃, -methoxyphenyl, and -pyridinyl.

4. The inhibitor of claim 1 wherein R^1 is selected from the group consisting of -H, -OH, -NH₂, -CH₂OH, -C≡N, -(CO)-NH₂, -(CO)-OH, -(CO)-O-CH₃, -CH=N-OH, -CH=N-NH₂, -CH=N-NH-CH₃, -(CO)-CF₃, -(CO)H, -NO₂, -(CO)-alkyl, -(CO)-substituted alkyl, -(CO)-aryl, -(CO)-substituted aryl, -(CO)-heteroaryl, -(CO)-CH₂-NR^dR^e, and -(CO)NR^dR^e.

5. The inhibitor of claim 1 wherein R^2 is -H, -OH, -F, -CH₂-OH, -NH₂, -NH-(CO)-CF₃, -NH-(CO)-CH₃, -NH-(SO₂)-CH₃, -NH-CH₃, and -N(CH₃)-(CO)-CF₃.

6. A DNA-PK inhibitor having a formula:



or a pharmaceutically acceptable salt thereof, wherein:

Z, independently, is CR⁷ or N;

L is selected from the group consisting of alkylene, substituted alkylene, carbonyl, carbamoyl, NR^h , oxy (-O-), thio (-S-), thionyl (-SO-), and sulfonyl;

A is absent, or A is an optionally substituted four- to seven-membered aliphatic ring containing 0, 1, 2, or 3 heteroatoms, independently selected from the group consisting of N, O, and S;

R^5 is selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, heterocycloalkyl, $\text{N}(\text{R}^h)_2$, OR^h , carboxyl, carboxy, nitro, hydrazono, hydroxyamino, cyano, aldehyde, carboxamide, thiocarboxamide, acyl, mercapto, sulfonyl, trifluoromethyl, heteroaryl, and substituted heteroaryl;

R^6 is selected from the group consisting of hydrogen, alkyl, substituted alkyl, carbamoyl, carboxamide, $\text{N}(\text{R}^h)_2$, carboxy, OR^h , sulfamyl, nitro, phosphate, and sulfonamido; or

R^5 and R^6 are taken together with the carbon atoms to which each is attached to form a 5-, 6-, or 7-membered ring, wherein 1, 2, or 3 carbon atoms of R^5 and R^6 optionally are a heteroatom selected from the group consisting of O, N, S, and P, said ring optionally substituted with one or more of =O, =S, =NH, OR^h , $\text{N}(\text{R}^h)_2$, carboxyl, carboxy, alkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl, and said heteroatom optionally substituted with a substituent selected from the group consisting of aryl, substituted aryl, alkyl, alkyl substituted with acyl, and acyl;

R^7 , independently, is selected from the group consisting of hydrogen, halo, aldehyde, OR^h , nitro, $\text{N}(\text{R}^h)_2$, carboxyl, carboxy, sulfamyl, sulfonamido, and sulfo or a halide derivative thereof,

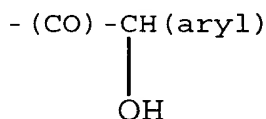
wherein R^h , independently, is selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, aryl, substituted aryl, heteroaryl, and substituted heteroaryl; and

R^8 , independently, is selected from the group consisting of OR^h , halo, $N(R^h)_2$, aldehyde, alkyl, substituted alkyl, acyl, aryl, substituted aryl, heteroaryl, and substituted heteroaryl.

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7. The inhibitor of claim 6 wherein

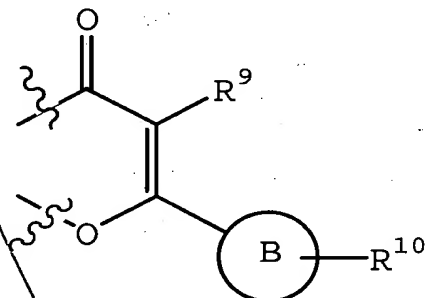
R^5 is selected from the group consisting of -H, -NH₂, -(CO)-NH₂, -(CO)-NH-OH, -(CO)-NH-NH₂, -(CO)-NH-NH-R^f, -(CO)-OH, -(CO)-O-CH₃, -(CO)-O-CH₂-CH₃, -(CO)-(4-methoxy)phenyl, -(CO)-(4-hydroxy)phenyl, -(CO)-(3-chlorophenyl), -(CO)-phenyl, -(CO)-benzyl, -(CO)-C₁₋₄alkyleneOR^h, -(CO)-C₁₋₄alkyleneSR^h,



-NO₂, -OH, -(CO)-C₁₋₄ alkyl, -cycloalkyl, -(CO)-substituted alkyl, -(CO)-(methoxy)alkyl, -(CO)-(alkoxy) substituted alkyl, -(CO)-aryl, -(CO)-heteroaryl, -(CO)-(substituted alkyl)_p-aryl, -(CO)-(substituted alkoxy)_p-aryl, -(CO)-((NR^k)_p-substituted alkoxy)-aryl, -(CO)-aryl-R^d, -(CO)-aryl-R^e, -(CO)-aryl-R^f, -CH=N-OH, -CH=N-NH₂, -CH=N-NH-CH₃, -CH=N-NH-CH₂-phenyl, -CF₃, -(CO)-CF₃, -(CO)-CH₂-morpholinyl, -(CO)-CH₂-heteroaryl, -(CO)-CH₂-CH-(CH₃)₂, -(CO)-CH₂-CH₂-(SO₂)-CH₃, -CHO, -C≡N, -CH₂-OH, -(CO)NR^dR^e, -(CS)-NH₂, -(CO)-R^f, -(CO)-CH₂Cl, -(CO)-CH₂-NR^dR^e, -(CO)-CH₂-S-(CO)-CH₃, -(CO)-CH₂-SH, -(SO₂)-phenyl, 2-(anilino)-4-thiazolyl-, 2-(pyridyl)-4-thiazolyl-, -benzoxazolyl, -imidazolyl, -thiazolyl, -substituted thiazolyl, -benzimidazolyl, -benzothiazolyl, -tetrazolyl, -(N-benzyl)-tetrazolyl, -(N-methyl)-tetrazolyl, -pyrazolyl, -(N-benzyl)-pyrazolyl, -(N-methyl)-pyrazolyl, -(N-acetyl)-pyrazolyl, -(N-mesyl)-pyrazolyl, -pyrazolyl-(CO)-R^uR^v, -(N-phenyl)-piperazinyl, -isoxazolyl, -pyrimidinyl, -(2-NH-CH₂-phenyl)-pyrimidinyl, -(2-(SO)-methyl)-pyrimidinyl, -(2-N-(N-t-butoxycarbonyl)-piperazinyl)-pyrimidinyl, and -(2-NH-CH₂-pyridine)-pyrimidinyl;

R⁵ and R⁶ are taken together to form a three- or four-membered component, respectively, of a five- or six-membered ring, preferably said ring selected from the group consisting of -2-imidazolidonyl-, -R⁸-thiazolyl-, -carbonylpyrrolyl methyl ketone-, -4-imino- 1,3,2-oxathiaphosphanyl-2-

thione-, -4-imino-1,3,2-oxathiaphosphanyl-2-thione-2-(4'-methoxy)phenyl-,
-3-oxofuranyl-, -N-acetyl-3-oxopyrrolinyl-, -N-(CH₂-COOH)-quinolonyl-,
-N-(t-butoxycarbonyl)-quinolonyl-, -N-(CH₂-COOH)-quinolonyl-, -N-(t-
butoxycarbonyl)-quinolonyl-, and



wherein B is aryl or a nitrogen-containing heteroaryl, R⁹ is H or OR^h, and R¹⁰ is selected from the group consisting of halo, OR^h, O(CH₂)₁₋₃N(R^h)₂, O(CH₂)₁₋₃CO₂H, CN, morpholinyl, and N-(4-methyl)-piperazinyl;

wherein R^g is selected from the group consisting of -pyridyl and -anilino;

R⁷, independently, is selected from the group consisting of -H, -OH, -OR^d, -NO₂, -NH₂, -NH-R^d, -halo, -CHO, -(SO₂)-OH, -(SO₂)-Cl, and -(SO₂)-NRⁱR^k;

wherein Rⁱ is selected from the group consisting of -H, -CH₃, -CH₂-phenyl, -phenyl, -CH₂-CH₂-O-CH₃, -CH₂-CH₂-CH₂-N(CH₃)₂, -O-CH₃, -CH₂-CH₂-(SO₂)-CH₃, -pyridyl, -thiazolyl, -O-CH₂-phenyl, -OH, -CH₂-(CO)-O-CH₃, and -CH₂-(CO)-OH;

R^k is selected from the group consisting of -H, -O-CH₃, -CH₂-pyridyl, -CH₂-phenyl, -CH₃, -CH₂-(CO)-O-CH₃, -cyclopropyl, and -CH₂-cyclopropyl;
or

R^i and R^k are taken together to form morpholinyl, phenylpiperazinyl, imidazolyl, pyrrolidinyl, (N-methyl)-piperazinyl, and piperidinyl; and

R^8 , independently, is selected from the group consisting of -H, -CH₃, -OCH₃, -OH, -(CO)-CH₃, -methoxyphenyl, and -pyridinyl.

8. The inhibitor of claim 6 wherein R^5 is selected from the group consisting of -H, -OH, -NH₂, -CH₂OH, -C≡N, -(CO)-NH₂, -(CO)-OH, -(CO)-O-CH₃, -CH=N-OH, -CH=N-NH₂, -CH=N-NH-CH₃, -(CO)-CF₃, -(CO)H, -NO₂, -(CO)-alkyl, -(CO)-substituted alkyl, -(CO)-aryl, -(CO)-substituted aryl, -(CO)-heteroaryl, -(CO)-CH₂-NR^dR^e, and -(CO)NR^dR^e.

9. The inhibitor of claim 6 wherein R^6 is selected from the group consisting of -H, -OH, -F, -CH₂-OH, -NH₂, -NH-(CO)-CF₃, -NH-(CO)-CH₃, -NH-(SO₂)-CH₃, -NH-CH₃, and -N(CH₃)-(CO)-CF₃.

10. A DNA-PK inhibitor selected from the group consisting of:
- benzyl 2-((4-benzyl)carbonyl)-5-morpholin-4-yl-benzene phosphate;
 - 4-methylphenyl 4-morpholin-4-yl-2-(phosphonooxy)phenyl methanone disodium salt;
 - 5-morpholin-4-yl-2-nitrophenylamine;
 - 5-(4-methyl-piperazin-1-yl)-2-nitrophenylamine;
 - 2-hydroxymethyl-5-morpholin-4-yl-phenol;
 - 2-nitro-5-thiomorpholin-4-yl-phenylamine;
 - N'*-morpholin-4-yl-4-nitrobenzene-1,3-diamine;
 - 1-(3-amino-4-nitrophenyl)-piperidin-4-ol;
 - 2-nitro-5-piperidin-1-yl-phenylamine;
 - 5-(4-acetyl-piperazin-1-yl)-2-nitrophenylamine;
 - 2-nitro-5-piperazin-1-yl-phenylamine;
 - 1-(3-amino-4-nitrophenyl)-piperidin-3-ol;
 - N'*-(2-morpholin-4-yl-ethyl)-4-nitrobenzene-1,3-diamine;
 - 5-(4-(2-methoxyphenyl)-piperazin-1-yl)-2-nitrophenylamine;
 - 5-(cis-2,6-dimethylmorpholin-4-yl)-2-nitrophenylamine;
 - 2-nitro-5-(4-pyridin-2-yl-piperazin-1-yl)-phenylamine;
 - N'*-(3-morpholin-4-yl-propyl)-4-nitrobenzene-1,3-diamine;
 - 2-hydroxy-4-morpholin-4-yl-benzonitrile;
 - (5-morpholin-4-yl-2-nitrophenyl)-methanol;
 - 2-hydroxy-4-morpholin-4-yl-benzoic acid;
 - 2-hydroxy-4-morpholin-4-yl-benzoic acid methyl ester;
 - 5-morpholin-4-yl-2-nitro-benzamide;
 - 2-hydroxy-4-morpholin-4-yl-benzaldehyde;
 - 5-morpholin-4-yl-2-nitro-phenol;
 - 1-(2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
 - 1-(2-hydroxy-4-morpholin-4-yl-phenyl)-propan-1-one;
 - 1-(2-hydroxy-4-morpholin-4-yl-phenyl)-3-methyl-butan-1-one;
 - 1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-phenyl-methanone;
 - 2,2,2-trifluoro-1-(2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;

4-amino-2-morpholin-4-yl-pyrimidine-5-carboxylic acid;
1-(5-bromo-2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
1-(3-bromo-2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
1-(3,5-dichloro-2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
1-(3-chloro-2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
1-(5-fluoro-2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
1-(3-fluoro-2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
1-(2-hydroxy-4-(tetrahydropyran-4-yloxy)-phenyl)-ethanone;
5-(morpholin-4-yl)-1,3-dihydro-benzimidazol-2-one;
2-methoxy-4-morpholin-4-yl-benzaldehyde;
4-methoxy-6-morpholin-4-yl-benzene-1,3-dicarbaldehyde;
2-hydroxy-5-morpholin-4-yl-benzoic acid methyl ester;
2-((hydroxyimino)methyl)-5-morpholin-4-yl-phenol;
2-hydrazonomethyl-5-morpholin-4-yl-phenol;
2-hydroxy-4-((1-morpholin-4-yl-methanoyl)-amino]-benzoic acid;
2-hydroxy-4-morpholin-4-ylmethyl-benzoic acid methyl ester hydrochloride;
2-hydroxy-4-morpholin-4-ylmethyl-benzoic acid trifluoroacetate;
2-hydroxy-4-morpholin-4-ylmethyl benzoic acid hydrochloride;
4-amino-2-hydroxy-benzoic acid methyl ester;
2-hydroxy-4-morpholin-4-yl-benzoic acid methyl ester;
2-hydroxy-*N*-methyl-4-morpholin-4-yl-benzamide;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-morpholin-4-yl-methanone;
2-hydroxy-4-morpholin-4-yl-benzamide;
2-hydroxy-4-morpholin-4-yl-*N*-benzyl-benzamide;
2-hydroxy-4-morpholin-4-yl-*N*-phenyl-benzamide;
N-cyclopropyl-2-hydroxy-4-morpholin-4-yl-*N*-phenyl-benzamide;
2-hydroxy-*N*-(2-methoxy-ethyl)-4-morpholin-4-yl-benzamide;
2-hydroxy-4-morpholin-4-yl-*N*-methoxy-*N*-methyl-benzamide;
2-hydroxy-4-morpholin-4-yl-*N*-(3-dimethylamino-propyl)-benzamide;
2-hydroxy-*N*-methoxy-4-morpholin-4-yl-benzamide;

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2-hydroxy-*N*-(2-methanesulfonyl-ethyl)-4-morpholin-4-yl-benzamide;
2-hydroxy-4-morpholin-4-yl-*N*-pyridin-3-yl-benzamide;
2-hydroxy-4-morpholin-4-yl-*N*-pyridin-4-yl-benzamide;
2-hydroxy-4-morpholin-4-yl-*N*-thiazol-2-yl-benzamide;
2-hydroxy-4-morpholin-4-yl-*N*-(1,4-thiazin-2-yl)-benzamide;
2,*N*-dihydroxy-4-morpholin-4-yl-benzamide;
2-hydroxy-4-morpholin-4-yl-*N*-(4-pyridylmethyl)-benzamide;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-(4-phenylpiperizin-1-yl)-methanone;
2-hydroxy-4-morpholin-4-yl-benzoic acid;
N-carboxymethyl-2-hydroxy-4-morpholin-4-yl-phenyl-carboxamide methyl ester;
N-carboxymethyl-2-hydroxy-4-morpholin-4-yl-phenyl-carboxamide;
2-hydroxy-4-morpholin-4-yl-thiobenzamide;
2-(4-ethylphenyl)-4-imino-7-morpholin-4-yl-benzo(e)-1,3,2-oxathiaphosphane-2-thione;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-phenyl-methanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-(4-trifluoromethylphenyl)-methanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-(*o*-tolyl)-methanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-(4-methoxyphenyl)-methanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-pyridin-3-yl-methanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-pentan-1-one;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-2-phenyl-ethanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-thiophen-2-yl-methanone;
2-hydroxy-4-morpholin-4-yl-phenyl-1,3-thiazol-2-yl ketone;
1-(3-chlorophenyl)-1-(2-hydroxy-4-morpholin-4-yl-phenyl)-methanone;
2-chloro-1-(2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-2-morpholin-4-yl-ethanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-2-imidazol-1-yl-ethanone;

1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-pyrrolidin-1-yl-methanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-1-(4-methylpiperazin-1-yl)-methanone;
2-hydroxy-4-morpholin-4-yl-phenyl-1-piperidin-1-yl-methanone;
2-(benzyl-methyl-amino)-1-(2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
2-acetylthio-1-(2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone;
1-(2-hydroxy-4-morpholin-4-yl-phenyl)-2-mercapto-ethanone;
6-morpholin-4-yl-2-hydrobenzo(b)furan-3-one;
4-(2-methyl-4-morpholin-4-yl-phenyl)-2-(3-pyridyl)-1,3-thiazole;
5-morpholin-4-yl-2-(2-phenylamino-1,3-thiazol-4-yl)-phenol;
3-methoxy-1-morpholin-4-yl-benzene;
4-methoxy-2-morpholin-4-yl-benzenesulfonic acid;
4-methoxy-2-morpholin-4-yl-benzenesulfonyl chloride;
4-methoxy-*N*-methyl-2-morpholin-4-yl-benzenesulfonamide;
4-methoxy-2-morpholin-4-yl-*N*-benzyl-benzenesulfonamide;
4-methoxy-2-morpholin-4-yl-*N*-cyclopropylmethyl-benzenesulfonamide;
N,N-diethyl-(3-morpholin-4-yl-phenoxy)carboxamide;
N,N-diethyl-(2-benzenesulfonyl-5-morpholin-4-yl-phenoxy)carboxamide;
2-benzenesulfonyl-5-morpholin-4-yl-phenol;
3-nitro-1-morpholin-4-yl-benzene;
3-morpholin-4-yl-phenylamine;
1-(2-amino-4-morpholin-4-yl-phenyl)-2-chloro-ethanone;
2-amino-4-morpholin-4-yl-*N*-benzyl-*N*-methyl-benzamide;
1-(2-amino-4-morpholin-4-yl-phenyl)-1-pyrrolidin-1-yl-methanone;
(2-amino-4-morpholin-4-yl-phenyl)-1-piperidin-1-yl-methanone;
2-amino-4-fluorobenzoic acid methyl ester;
4-fluoro-2-(2,2,2-trifluoroacetyl-amino)-benzoic acid methyl ester;
4-morpholin-4-yl-2-(2,2,2-trifluoroacetyl-amino)-benzoic acid methyl ester;
2-amino-4-morpholin-4-yl-benzoic acid;
2-methylsulfonylamino-4-morpholin-4-yl-benzoic acid;

4-morpholin-4-yl-2-(2,2,2-trifluoroacetyl-amino)-*N*-benzyl-benzamide;
N,N-dimethyl-4-morpholin-4-yl-2-(2,2,2-trifluoroacetyl-amino)-benzamide;
2-amino-4-morpholin-4-yl-*N,N*-dimethyl-benzamide;
N-methyl-4-morpholin-4-yl-2-(2,2,2-trifluoroacetyl-amino)-benzamide;
2-amino-4-morpholin-4-yl-benzoic acid methyl ester;
2-acetyl-amino-4-morpholin-4-yl-benzoic acid methyl ester;
2-acetyl-amino-4-morpholin-4-yl-benzoic acid;
2-methanesulfonyl-amino-4-morpholin-4-yl-benzoic acid methyl ester;
(2-*N*-methyl-*N*-(2,2,2-trifluoroacetyl)-amino)-4-morpholin-4-yl-benzoic acid
methyl ester;
2-methyl-amino-4-morpholin-4-yl-benzoic acid methyl ester;
2-methyl-amino-4-morpholin-4-yl-benzoic acid;
2-chloro-1-(2-acetamido-4-morpholin-4-yl-phenyl)-ethanone;
1-acetyl-6-morpholin-4-yl-1,2-dihydro-indol-3-one;
4-morpholin-4-yl-2-nitro-benzoic acid methyl ester;
4-morpholin-4-yl-2-nitro-benzoic acid;
4-morpholin-4-yl-2-nitrophenyl)-*N*-(methylcarboxymethyl)benzamide;
5-hydroxy-7-morpholin-4-yl-2-phenyl-chromen-4-one;
5-hydroxy-2-phenyl-7-piperidin-1-yl-chromen-4-one;
trifluoromethanesulfonic acid 3,5-dihydroxy-4-oxo-2-phenyl-4H-chromen-7-yl
ester;
3,5-dihydroxy-7-morpholin-4-yl-2-phenyl-chromen-4-one;
trifluoromethanesulfonic acid 4-acetyl-3,5-dihydroxy-phenyl ester;
1-(2,6-dihydroxy-4-morpholin-4-yl-phenyl)-ethanone;
4-(5-hydroxy-7-morpholin-4-yl-4-oxo-4H-chromen-2-yl)-benzonitrile;
3-(5-hydroxy-7-morpholin-4-yl-4-oxo-4H-chromen-2-yl)-benzonitrile;
5-hydroxy-2-(4-methoxyphenyl)-7-morpholin-4-yl-chromen-4-one;
5-hydroxy-7-morpholin-4-yl-2-pyridin-3-yl-chromen-4-one;
2-hydroxy-1-(2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone; and
2-hydroxy-1-(2-hydroxy-4-morpholin-4-yl-phenyl)-ethanone.

11. A pharmaceutical composition comprising (a) DNA-PK inhibitor claim 1 or claim 6, and (b) a pharmaceutically acceptable carrier or diluent.

12. A pharmaceutical composition comprising (a) a DNA-PK inhibitor of claim 1 or 6, and (b) an anti-neoplastic agent.

13. The pharmaceutical composition of claim 12, with the proviso that when A is morpholinyl, L is absent, R^2 and R^4 are hydrogen, and ZR^3 is CH at each occurrence, then R^1 is different from $-(CO)-CH_3$, $-(C=CH_2)-$ phenyl, and nitro; and with the proviso that when A is morpholinyl, R^4 is hydrogen, and Z is nitrogen at each occurrence, then R^1 and R^2 , when taken together, are different from triazole.

14. The pharmaceutical composition of claim 12 wherein A is a morpholinyl, and L is absent.

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15. The pharmaceutical composition of claim 12 wherein
n is an integer from 0 through 4;

Z, independently, is CR³ or N, or CR⁷ or N;

L is absent, or L is selected from the group consisting of -(CH₂)_p-,
-(CHR^k)_p-, -NR^k-(CHR^k)_p-, -(CHR^k)-NR^k-, -NR^k-, -C(=O)-, -O-, -NR^k-(CO)-,
-(CO)-NR^k-, -S-, -SO-, -SO₂-, and -NR^sR^t (only if A is absent), wherein p is an
integer 1 to 5;

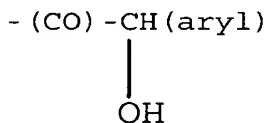
R^k is selected from the group consisting of alkyl, aryl, and hydrogen;

R^s is selected from the group consisting of hydrogen, and alkyl;

R^t is alkyl, optionally substituted with oxo, hydroxy, methoxy,
benzyloxy, halo, aryl, or heteroaryl;

A is absent, or is selected from the group consisting of a four- to seven-
membered heterocyclic ring containing 1 or 2 heteroatoms independently
selected from the group consisting of N, O, and S;

R¹ or R⁵ is selected from the group consisting of -H, -NH₂, -(CO)-NH₂,
-(CO)-NH-OH, -(CO)-NH-NH₂, -(CO)-NH-NH-R^f, -(CO)-OH, -(CO)-O-CH₃,
-(CO)-O-CH₂-CH₃, -(CO)-(4-methoxy)phenyl, -(CO)-(4-hydroxy)phenyl,
-(CO)-(3-chlorophenyl), -(CO)-phenyl, -(CO)-benzyl, -(CO)-C₁₋₄alkyleneOR^h,
-(CO)-C₁₋₄alkyleneSR^h,



-NO₂, -OH, -(CO)-C₁₋₄ alkyl, -cycloalkyl, -(CO)-substituted alkyl, -(CO)-
(methoxy)alkyl, -(CO)-(alkoxy) substituted alkyl, -(CO)-aryl, -(CO)-
heteroaryl, -(CO)-(substituted alkyl)_p-aryl, -(CO)-(substituted alkoxy)_p-aryl,
-(CO)-((NR^k)_p-substituted alkoxy)-aryl, -(CO)-aryl-R^d, -(CO)-aryl-R^e, -(CO)-

aryl-R^f, -CH=N-OH, -CH=N-NH₂, -CH=N-NH-CH₃, -CH=N-NH-CH₂-phenyl, -CF₃, -(CO)-CF₃, -(CO)-CH₂-morpholinyl, -(CO)-CH₂-heteroaryl, -(CO)-CH₂-CH-(CH₃)₂, -(CO)-CH₂-CH₂-(SO₂)-CH₃, -CHO, -C≡N, -CH₂-OH, -(CO)NR^dR^e, -(CS)-NH₂, -(CO)-R^f, -(CO)-CH₂Cl, -(CO)-CH₂-NR^dR^e, -(CO)-CH₂-S-(CO)-CH₃, -(CO)-CH₂-SH, -(SO₂)-phenyl, 2-(anilino)-4-thiazolyl-, 2-(pyridyl)-4-thiazolyl-, -benzoxazolyl, -imidazolyl, -thiazolyl, -substituted thiazolyl, -benzimidazolyl, -benzothiazolyl, -tetrazolyl, -(N-benzyl)-tetrazolyl, -(N-methyl)-tetrazolyl, -pyrazolyl, -(N-benzyl)-pyrazolyl, -(N-methyl)-pyrazolyl, -(N-acetyl)-pyrazolyl, -(N-mesyl)-pyrazolyl, -pyrazolyl-(CO)-R^uR^v, -(N-phenyl)-piperazinyl, -isoxazolyl, -pyrimidinyl, -(2-NH-CH₂-phenyl)-pyrimidinyl, -(2-(SO)-methyl)-pyrimidinyl, -(2-N-(N-t-butoxycarbonyl)-piperazinyl)-pyrimidinyl, and -(2-NH-CH₂-pyridine)-pyrimidinyl;

wherein R^d is selected from the group consisting of -H, -alkyl, -CH₂-phenyl, -phenyl, -O-CH₃, -pyridyl, -thiazolyl, -thiazinyl, -O-CH₂-phenyl, -O-phenyl, -O-methoxyphenyl, -OH, -CH₂-(CO)-O-CH₃, and -CH₂-(CO)-OH; and

R^e is selected from the group consisting of -H, -CH₂-CH₂-O-CH₃, -CH₂-CH₂-CH₂-N(CH₃)₂, -O-CH₃, -CH₂-CH₂-(SO₂)-CH₃, -O-CH₃, -CH₂-pyridyl, -CH₂-phenyl, -alkyl, -CH₂-(CO)-O-CH₃, and -cyclopropyl; or

R^d and R^e are taken together to form -morpholinyl, -phenylpiperazinyl, -imidazolyl, -pyrrolidinyl, -(N-methyl)-piperazinyl, and -piperidinyl;

R^f is selected from the group consisting of -phenyl, -phenyl-(CF₃), -methylphenyl, -methoxyphenyl, -pyridyl, -alkyl, -benzyl, -thiophenyl, -thiazolyl, -chlorophenyl, -C(=NH)-NH₂, -fluorophenyl, -(CO)-phenyl, -(CH₂)-phenyl;

R^u is selected from the group consisting of -H, and -alkyl;

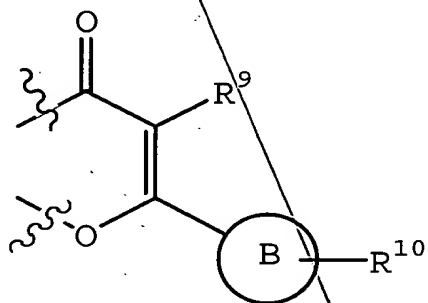
R^v is selected from the group consisting of -O-(CO)-CH₃, -NH-t-butoxycarbonyl, -O-phenyl, and -O-CH₂-phenyl; or

R^u and R^v are taken together with the carbon atoms to which they are attached to form a 5-membered ring containing an N, said N optionally protected with t-butoxycarbonyl;

R^2 or R^6 is selected from the group consisting of -H, -OH, -Halo, -CH₂-OH, -(CO)-NH₂, -NH₂, -(CO)-O-CH₃, -O-CH₃, -NH-(CO)-CF₃, -NH-(CO)-CH₃, -NH-(SO₂)-CH₃, -NH-CH₃, -N(CH₃)-(CO)-CF₃, -N=((CH(phenyl)-CH₂-(CO)OH, -NO₂, -O-PO₃⁼, -O-alkyl, -O-(CH₂)_p-OH, -O-(CH₂)_p-O-benzyl, -O-(CO)-heteroaryl, -O-(CO)-amino acid, -O-(CO)-nicotinic acid, -O-(CO)-aryl, -O-(CO)-alkyl, -O-CH₂-(CO)-benzyl, -O-(SO₂)-O-CF₃, -(CH₂)-CH=CH=N(CH₃)₂, -O-(SO₃)-, and -O-(PO)(OR^j)(OR^k);

wherein R^j independently are H, aryl, alkyl, or heterocyclic; or

R¹ and R², or R⁵ and R⁶, are taken together to form a three- or four-membered component, respectively, of a five- or six-membered ring, preferably said ring selected from the group consisting of -2-imidazolidonyl-, -R⁸-thiazolyl-, -carbonylpyrrolyl methyl ketone-, -4-imino-1,3,2-oxathiaphosphanyl-2-thione-, -4-imino-1,3,2-oxathiaphosphanyl-2-thione-2-(4'-methoxy)phenyl-, -3-oxofuranyl-, -N-acetyl-3-oxopyrrolinyl-, -N-(CH₂-COOH)-quinolonyl-, -N-(t-butoxycarbonyl)-quinolonyl-, -N-(CH₂-COOH)-quinolinyl-, -N-(t-butoxycarbonyl)-quinolinyl-, and



wherein B is aryl or a nitrogen-containing heteroaryl, R⁹ is H or OR^h, and R¹⁰ is selected from the group consisting of halo, OR^h, O(CH₂)₁₋₃N(R^h)₂, O(CH₂)₁₋₃CO₂H, CN, morpholinyl, and N-(4-methyl)-piperazinyl,

wherein R^8 is selected from the group consisting of -pyridyl and -anilino;

R^3 or R^7 , independently, is selected from the group consisting of -H, -OH, -OR^d, -NO₂, -NH₂, -NH-R^d, -halo, -CHO, -(SO₂)-OH, -(SO₂)-Cl, and -(SO₂)-NRⁱR^k;

wherein R^i is selected from the group consisting of -H, -CH₃, -CH₂-phenyl, -phenyl, -CH₂-CH₂-O-CH₃, -CH₂-CH₂-CH₂-N(CH₃)₂, -O-CH₃, -CH₂-CH₂-(SO₂)-CH₃, -pyridyl, -thiazolyl, -O-CH₂-phenyl, -OH, -CH₂-(CO)-O-CH₃, and -CH₂-(CO)-OH;

R^k is selected from the group consisting of -H, -O-CH₃, -CH₂-pyridyl, -CH₂-phenyl, -CH₃, -CH₂-(CO)-O-CH₃, -cyclopropyl, and -CH₂-cyclopropyl; or

R^i and R^k are taken together to form morpholinyl, phenylpiperazinyl, imidazolyl, pyrrolidinyl, (N-methyl)-piperazinyl, and piperidinyl; and

R^4 or R^8 , independently, is selected from the group consisting of -H, -CH₃, -OCH₃, -OH, -(CO)-CH₃, -methoxyphenyl, and -pyridinyl.

16. The pharmaceutical composition of claim 12 wherein R^1 or R^5 is selected from the group consisting of -H, -OH, -NH₂, -CH₂OH, -C≡N, -(CO)-NH₂, -(CO)-OH, -(CO)-O-CH₃, -CH=N-OH, -CH=N-NH₂, -CH=N-NH-CH₃, -(CO)-CF₃, -(CO)H, -NO₂, -(CO)-alkyl, -(CO)-substituted alkyl, -(CO)-aryl, -(CO)-substituted aryl, -(CO)-heteroaryl, -(CO)-CH₂-NR^dR^e, and -(CO)NR^dR^e.

17. The pharmaceutical composition of claim 12 wherein R^2 or R^6 is selected from the group consisting of -H, -OH, -F, -CH₂-OH, -NH₂, -NH-(CO)-CF₃, -NH-(CO)-CH₃, -NH-(SO₂)-CH₃, -NH-CH₃, and -N(CH₃)-(CO)-CF₃.

18. A pharmaceutical composition comprising: (a) a DNA-PK inhibitor of claim 10, and (b) an anti-neoplastic agent.

19. The pharmaceutical composition of claim 18 wherein the anti-neoplastic agent comprises a chemotherapeutic agent or a radiotherapeutic agent.

20. The pharmaceutical composition of claim 19 wherein the anti-neoplastic agent is selected from the group consisting of an alkylating agent, an antimetabolite, a type I topoisomerase inhibitor, an antimitotic drug, an antibiotic, an enzyme, a biological response modifier, a differentiation agent, and a radiosensitizer.

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21. The pharmaceutical composition of claim 19 wherein the anti-neoplastic agent is selected from the group consisting of mechlorethamine, cyclophosphamide, ifosfamide, melphalan, carmustine, chlorambucil, lomustine, semustine, thriethylenemelamine, triethylene thiophosphoramide, hexamethylmelamine, busulfan, dacarbazine, methotrexate, trimetrexate, 5-fluorouracil, fluorodeoxyuridine, gemcitabine, cytosine arabinoside, 5-azacytidine, 2,2'-difluorodeoxycytidine, 6-mercaptopurine, 6-thioguanine, azathioprine, 2'-deoxycofomycin, erythrohydroxynonyladenine, fludarabine phosphate, 2-chlorodeoxyadenosine, camptothecin, topotecan, irinotecan, paclitaxel, vinblastine, vincristine, vinorelbine, docetaxel etoposide, teniposide, actinomycin D, daunomycin, doxorubicin, mitoxantrone, idarubicin, bleomycin, plicamycin, mitomycin C, dactinomycin, L-asparaginase, interferon-alpha, IL-2, G-CSF, GM-CSF, metronidazole, misonidazole, desmethylmisonidazole, pimonidazole etanidazole, nimorazole, RSU 1069, EO9, RB 6145, SR4233, nicotinamide, 5-bromodeoxyuridine, 5-iododeoxyuridine, bromodeoxycytidine, cisplatin, carboplatin, mitoxantrone, hydroxyurea, N-methylhydrazine, procarbazine, mitotane, aminogluthethimide, prednisone, dexamethasone, hydroxyprogesterone caproate, hydroxyprogesterone acetate, megestrol acetate, diethylstilbestrol ethynyl estradiol, tamoxifen, testosterone propionate, fluoxymesterone, flutamide, leuprolide, flutamide, tin etioporphyrin, pheoboride-a, bacteriochlorophyll-a, a naphthalocyanine, a phthalocyanine, and a zinc phthalocyanine.

22. A method of inhibiting DNA-PK activity comprising the step of contacting a DNA-PK with a DNA-PK inhibitor of claim 1 or 6.

23. A method of sensitizing a cell type to an agent that induces DNA lesions comprising the step of contacting the cell type with a compound of claim 1 or 6.

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24. The method of claim 23 wherein the agent that induces DNA lesions is selected from the group consisting of radiation, an exogenous chemical, a metabolite by-product, and combinations thereof.

25. A method of potentiating a therapeutic regimen for treatment of a cancer comprising the step of administering to an individual in need thereof an effective amount of a DNA-PK inhibitor of claim 1 or 6.

26. The method of claim 25 wherein the therapeutic regimen for treatment of cancer is selected from the group consisting of chemotherapy, radiation therapy, and a combination of chemotherapy and radiation therapy.

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27. A method of characterizing the potency of a test compound as an inhibitor of a DNA-PK polypeptide, said method comprising the steps of:

- a) measuring an activity of a DNA-PK polypeptide in the presence of a test compound;
- b) comparing the activity of the DNA-PK polypeptide in the presence of the test compound to the activity of the DNA-PK polypeptide in the presence of an equivalent amount of a reference compound of claim 1 or 6, wherein a lower activity of the DNA-PK polypeptide in the presence of the test compound than in the presence of the reference compound indicates that the test compound is a more potent inhibitor than the reference compound, and a higher activity of the DNA-PK polypeptide in the presence of the test compound than in the presence of the reference compound indicates that the test compound is a less potent inhibitor than the reference compound.

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a) determining an amount of a control compound of claim 1 or 6 that inhibits an activity of a DNA-PK polypeptide by a reference percentage of inhibition, thereby defining a reference inhibitory amount for the control compound;

c) comparing the reference inhibitory amount for the test compound to a reference inhibitory amount determined according to step (a) for the control compound, wherein a lower reference inhibitory amount for the test compound than for the control compound indicates that the test compound is a more potent inhibitor than the control compound, and a higher reference inhibitory amount for the test compound than for the control compound indicates that the test compound is a less potent inhibitor than the control compound.

30. The method of claim 29 wherein the method comprises determining the reference inhibitory amount of the test compound in an *in vitro* cell-based assay.

31. The method of claim 28 wherein the method comprises determining the reference inhibitory amount of the test compound in an *in vivo* assay.

32. An article of manufacture comprising:
- a) an anti-cancer compound that induces double-strand DNA breakage in cells; and
 - b) a package insert describing a coordinated administration to a patient of said anti-cancer compound and a DNA-PK inhibitor compound of claim 1 or 6.
33. The article of manufacture according to claim 32 wherein said anti-cancer compound induces DNA double strand breaks.
34. The article of manufacture according to claim 32 wherein the anti-cancer compound is selected from the group consisting of bleomycin and etoposide.
35. An article of manufacture, comprising:
- a) a compound selected from the group consisting of a cytokine, a lymphokine, a growth factor, and a hematopoietic factor; and
 - b) a package insert describing a coordinated administration to a patient of said compound and a DNA-PK inhibitor compound of claim 1 or 6.
36. An article of manufacture comprising:
- a) a pharmaceutical composition comprising a DNA-PK inhibitor of claim 1 or 6 in a pharmaceutically acceptable carrier; and
 - b) a package insert describing a therapeutic treatment comprising administering the DNA-PK inhibitor.

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37. An article of manufacture comprising:
- a) a pharmaceutical composition comprising a DNA-PK inhibitor of claim 1 or 6 in a pharmaceutically acceptable carrier; and
 - b) a package insert describing a therapeutic treatment comprising administering the DNA-PK inhibitor.
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